

Symbol Probability

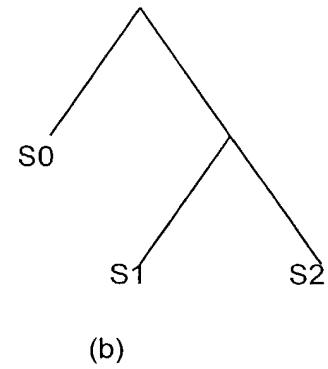
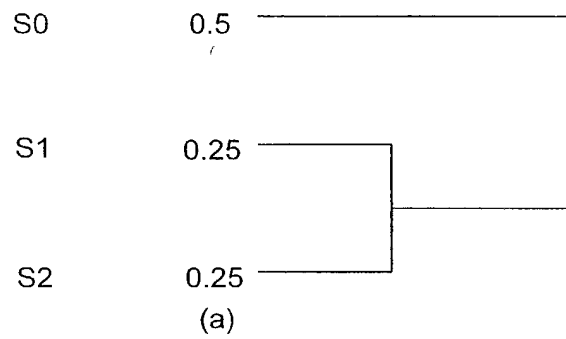


Figure 1

| Symbol | Huffman Code I | Huffman Code II | Huffman Code III | Huffman Code IV |
|--------|----------------|-----------------|------------------|-----------------|
| S0     | 0              | 0               | 1                | 1               |
| S1     | 10             | 11              | 01               | 00              |
| S2     | 11             | 10              | 00               | 01              |

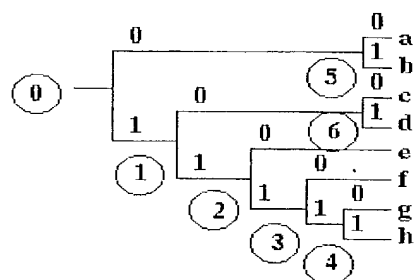
Figure 2

| Symbol | Length (bits) | Huffman code |
|--------|---------------|--------------|
| S0     | 5             | 11100        |
| S1     | 0             | -            |
| S2     | 0             | -            |
| S3     | 0             | -            |
| S4     | 4             | 0110         |
| S5     | 4             | 0111         |
| S6     | 4             | 1000         |
| S7     | 4             | 1001         |
| S8     | 3             | 000          |
| S9     | 4             | 1010         |
| S10    | 4             | 1011         |
| S11    | 3             | 001          |
| S12    | 3             | 010          |
| S13    | 5             | 11101        |
| S14    | 4             | 1100         |
| S15    | 6             | 111110       |
| S16    | 4             | 1101         |
| S17    | 5             | 11110        |
| S18    | 6             | 111111       |

**Figure 3**

| Symbol | Codeword |
|--------|----------|
| a      | 00       |
| b      | 01       |
| c      | 100      |
| d      | 101      |
| e      | 110      |
| f      | 1110     |
| g      | 11110    |
| h      | 11111    |

Encoding Table



Decoding Tree

Figure 4

| Memory Address |       | Output                   |                  |
|----------------|-------|--------------------------|------------------|
| Node           | Input | Next-Node/<br>[Codeword] | Termination Flag |
| 0              | 0     | 5                        | 0                |
| 0              | 1     | 1                        | 0                |
| 1              | 0     | 6                        | 0                |
| 1              | 1     | 2                        | 0                |
| 2              | 0     | [e]                      | 1                |
| 2              | 1     | 3                        | 0                |
| 3              | 0     | [f]                      | 1                |
| 3              | 1     | 4                        | 0                |
| 4              | 0     | [g]                      | 1                |
| 4              | 1     | [h]                      | 1                |
| 5              | 0     | [a]                      | 1                |
| 5              | 1     | [b]                      | 1                |
| 6              | 0     | [c]                      | 1                |
| 6              | 1     | [d]                      | 1                |

Figure 5





